

Application No. 09/783,940
Filed: February 15, 2001
TC Art Unit: 2664
Confirmation No.: 2337

REMARKS

The instant Amendment is filed in response to the official action dated August 26, 2004. Reconsideration is respectfully requested.

The status of the claims is as follows:

Claims 1-18 are currently pending.

Claims 1-18 stand rejected.

Claims 1-7, 12, and 15-18 have been amended.

The Examiner has rejected claims 1-10 and 12-18 under 35 U.S.C. 102(b) as being anticipated by Holden (USP 5,583,861). Specifically, the official action indicates, in relevant part, that the Holden reference teaches an ATM switching system architecture connectable to a communications network including an output port controller. The official action further indicates that the Holden reference teaches the replication of cells using a tree-based cell duplication system, which is embedded within a switch element. According to the official action, the cell duplication system and the output port controller are operative to replicate a received logical multicast data unit a predetermined number of times for subsequent transmission onto the communications network at an output port, as recited in claim 1. The Applicants respectfully submit, however, that the Holden

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reference does not teach each and every element or limitation of amended claim 1, and therefore does not anticipate amended claim 1 and the claims dependent therefrom. Accordingly, it is respectfully submitted that the rejections of claim 1 and the claims dependent therefrom under section 102 of the Patent Laws are unwarranted and should be withdrawn.

For example, the Applicants respectfully submit that the Holden reference neither teaches nor suggests a switching system operable to transfer logical multicast data units between a plurality of nodes on a communications network, in which an output port controller is operative to replicate a received data unit a predetermined number of times within the output port controller for subsequent transmission of the predetermined number of replicated data units onto the communications network at a respective output port as logical multicast data units, as recited in amended claim 1. The notion of replicating a data unit a predetermined number of times within an output port controller for subsequent transmission of the replicated data units onto a network at a respective output port as logical multicast data is described throughout the instant application, for example, see page 4, line 10, to page 5, line 19, of the application. The Applicants respectfully point out that logical multicast data are

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defined within the instant application as multiple copies of a data unit that exit a switching system through a single output port (see page 3, lines 16-17, of the application).

Instead of disclosing a switching element operable to transfer logical multicast data units between a plurality of nodes on a communications network, the Holden reference discloses a switching element for transferring spatial multicast data units between nodes on a network. Spatial multicast data are defined within the instant application as single copies of a data unit that exit a switching system through more than one output port (see page 3, lines 13-15, of the application). Spatial multicast data is described throughout the Holden reference, for example, see column 11, lines 25-28 ("During multicast transmission, data from one source is distributed to several destinations..."), column 11, lines 37-39 ("With source cell duplication, the source 62 of the data cells creates copies of each cell for transmission to each destination."), and column 11, lines 55-59 ("...a module 72 is provided ... which duplicates the transmitted cells from a source 74 as necessary for distribution to destinations 64, 66, 68..."), and Figs. 11-12, of Holden. The Holden reference does not teach creating multiple copies of a data unit that subsequently exit a

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switching system through a single output port, as required for the transmission of logical multicast data.

As indicated above, the Holden reference teaches the replication of cells using a tree-based cell duplication system, which is embedded within a switch element (see column 11, line 64, to column 12, line 10, and Fig. 13, of Holden). The Applicants respectfully submit that the tree-based cell duplication system of Holden is used to distribute data from one source to several destinations, i.e., for distributing spatial multicast data. As disclosed by Holden, "with a tree-based cell duplication system 76, the transmitted cells are not duplicated until the last points of divergence 77, 79 to the destinations 64, 66, 68.." (see column 12, lines 1-4, of Holden). Holden also discloses that one shortcoming of the tree-based cell duplication system is that "all destinations 64, 66, 68 of a multicast cell may not be reachable with a cell having the same address" (see column 12, lines 7-10, of Holden). As explained above, logical multicast data exit a switching system not through multiple destinations (output ports), but through a single output port. Because Holden describes the tree-based cell duplication system with reference to a multicast cell having multiple destinations 64, 66, 68, it is clear that

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Holden is concerned with the handling of spatial multicast data, not logical multicast data.

The Applicants respectfully point out that the switching system recited in amended claim 1 avoids the above-mentioned shortcoming of the tree-based cell duplication system, as disclosed in the Holden reference, because the claimed switching system handles logical multicast data having only one destination (output port), not multiple destinations. The operation of the switching system of amended claim 1 is therefore significantly different from that of the tree-based cell duplication system of Holden because the claimed switching system is concerned with reaching only the single destination (output port) of the logical multicast data - it is not concerned with the problem of reaching multiple destinations of spatial multicast data like the tree-based cell duplication system of Holden.

Because the Holden reference neither teaches nor suggests a switching system operable to transfer logical multicast data units between a plurality of nodes on a communications network, in which an output port controller is operative to replicate a received data unit a predetermined number of times for subsequent transmission of the predetermined number of replicated data units onto the network at a respective output port as logical multicast

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data, as recited in amended claim 1, the Holden reference does not anticipate amended claim 1 and the claims dependent therefrom.

Accordingly, as indicated above, the Applicants respectfully submit that the rejections of claim 1 and the claims dependent therefrom under section 102 of the Patent Laws are unwarranted and should be withdrawn. Moreover, because amended method claim 15 is the analog of amended system claim 1, it is respectfully submitted that the rejections of claim 15 and the claims dependent therefrom under 35 U.S.C. 102 are unwarranted and should be withdrawn.

With regard to base claim 6, the official action indicates that the Holden reference discloses "metering" by maintaining a count of queued cells within a back-pressure controller, which regulates the transmission of cells in conformance with a predetermined quality of service criteria. The Applicants respectfully point out, however, that amended claim 6 recites a switching system operable to transfer logical multicast data units between a plurality of nodes on a communications network. Because, as explained above, the Holden reference merely describes the transmission of spatial multicast data, not logical multicast data, the Applicants respectfully submit that the Holden reference does not anticipate amended claim 6 and the claims dependent therefrom.

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The Applicants further submit that the back-pressure controller of Holden does not correspond to the meter, as recited in amended claim 6. For example, as described in the instant application, the meter 205 is configured to be charged once for each logical multicast data unit provided thereto; i.e., the meter 205 makes a single determination for each logical multicast data unit as to whether the data unit conforms to a predetermined guaranteed bandwidth (see page 16, lines 10-14, and Fig. 2, of the application). As disclosed in the instant application, the determination as to whether a logical multicast data unit conforms to the predetermined quality of service criteria, e.g., the predetermined guaranteed bandwidth, can be made by accessing the header information of the data unit (see page 2, line 29, to page 3, line 2, of the application).

In contrast, the back-pressure controller of Holden does not access the header information of logical multicast data to determine the quality of service criteria of the data, but instead issues back-pressure signals to each connection of each of its input interfaces on a per-input, per-priority basis to halt the flow of cells having a given priority to a given input (see column 7, line 65, to column 8, line 2, of Holden). Clearly, the back-pressure controller of Holden does not correspond to the meter,

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which is operative to determine whether a predetermined number of transmitted logical multicast data units conform to predetermined quality of service criteria by an analysis of the data units, as recited in amended claim 6.

Accordingly, the Applicants respectfully submit that the rejections of claim 6 and the claims dependent therefrom under section 102 of the Patent Laws are unwarranted and should be withdrawn. Moreover, because amended method claim 17 is the analog of amended system claim 6, it is respectfully submitted that the rejection of claim 17 under 35 U.S.C. 102 is unwarranted and should be withdrawn.

With regard to base claim 12, the official action indicates that the Holden reference teaches a priority queue for storing cells in a preferential manner (see element 87, Fig. 15, of Holden). The Applicants respectfully point out, however, that amended claim 12 recites a switching system operable to transfer logical multicast data units between a plurality of nodes on a communications network. Because, as explained above, the Holden reference merely describes the transmission of spatial multicast data, the Applicants respectfully submit that the Holden reference does not anticipate amended claim 12 and the claims dependent therefrom.

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The Applicants further submit that the priority queue of Holden does not correspond to the buffer memory recited in amended claim 12 because the buffer memory stores a respective data unit in a preferential manner based at least in part on a predetermined number of times the data unit is subsequently transmitted on a network at a respective output port as logical multicast data units. As explained above, the switching element of Holden is configured to handle spatial multicast data, not logical multicast data. Accordingly, the Holden switching element including the priority queue is not concerned with the number of times a data unit is transmitted onto a network at a respective output port, and therefore does not store a data unit in a preferential manner based on the number of times the data unit is transmitted at a respective output port as logical multicast data, as recited in amended claim 12.

Accordingly, the Applicants respectfully submit that the rejections of claim 12 and the claims dependent therefrom under section 102 of the Patent Laws are unwarranted and should be withdrawn. Moreover, because amended method claim 18 is the analog of amended system claim 12, it is respectfully submitted that the rejection of claim 18 under 35 U.S.C. 102 is unwarranted and should be withdrawn.

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The Examiner has rejected claim 11 (which is dependent from claim 6) under 35 U.S.C. 103(a) as being unpatentable over Holden in view of Kumaran (USP 6,768,744). The Applicants respectfully submit, however, that the Kumaran reference does not cure the deficiencies of the Holden reference, and therefore the suggested combination of the Holden and Kumaran references does not render claim 11 obvious. Accordingly, it is respectfully submitted that the rejection of claim 11 under section 103 of the Patent Laws is unwarranted and should be withdrawn.

In view of the foregoing, it is respectfully submitted that the present application is in a condition for allowance. Early and favorable action is respectfully requested.

The Examiner is encouraged to telephone the undersigned Attorney to discuss any matter that would expedite allowance of

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the present application.

Respectfully submitted,

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